

WHAT IS CLAIMED IS:

- 1 1. A method for providing synchronization for an additional downlink channel comprising:
2 at a coprocessor,
3 generating a synchronization strobe as a response to a triggering event;
4 determining a time difference based upon the time stamp;
5 at a modem,
6 saving a time stamp when the synchronization strobe is received; and
7 providing the time stamp to the coprocessor.
- 1 2. The method of claim 1, wherein the time stamp is a counter's value when the
2 synchronization strobe is received.
- 1 3. The method of claim 2, wherein the counter is reset after the time stamp is saved.
- 1 4. The method of claim 1, wherein the time difference is used to set a code offset for a
2 received signal demodulator at the coprocessor.
- 1 5. The method of claim 1, wherein the time difference is the difference between the time
2 stamp and a second time stamp.
- 1 6. The method of claim 5, wherein the second time stamp is saved when the synchronization
2 strobe is generated.
- 1 7. The method of claim 5, wherein the second time stamp is saved at the coprocessor.

- 1 8. A method for providing an additional channel comprising:
2 detecting a timing for a transmission;
3 selecting a time to insert an extra transmission for the additional channel into the
4 transmission; and
5 inserting the extra transmission for the additional channel into the transmission.
- 1 9. The method of claim 8, wherein the timing is a frame timing, and wherein the extra
2 transmission is a frame.
- 1 10. The method of claim 8, wherein the timing is a slot timing, and wherein the extra
2 transmission is a slot.
- 1 11. The method of claim 8 further comprising prior to the detecting, selecting a branch of the
2 transmission.
- 1 12. The method of claim 11, wherein the transmission comprises two branches, and wherein
2 the selecting comprises selecting the branch with greater transmit power.
- 1 13. The method of claim 12, wherein a comparison of baseband transmit power gain factors
2 is used to determine the branch with greater transmit power.
- 1 14. The method of claim 8, wherein the detecting comprises determining the timing of a
2 modem uplink transmission with information available about the modem's transmission.
- 1 15. The method of claim 14, wherein the information comprises a channelization code, a
2 scrambling code, or a combination thereof.

1 16. The method of claim 8 further comprising prior to the detecting:
2 determining if there is a need to transmit on the additional channel; and
3 performing the detecting, selecting, and inserting only if there is a need to transmit on the
4 additional channel.

1 17. The method of claim 8 further comprising after the inserting:
2 tracking the timing changes; and
3 repeating the selecting and inserting.

1 18. The method of claim 17, wherein the tracking comprises:
2 determining the timing for a previous transmission;
3 determining the timing for a current transmission; and
4 providing a timing adjustment based on a difference between the timings.

- 1 19. A circuit for use in providing an additional channel comprising:
2 a sync and tracking unit coupled to a transmission input, the sync and tracking unit
3 containing circuitry to synchronize the circuit to a timing of a transmission provided by the
4 transmission input;
5 a matched filter coupled to the sync and tracking unit, the matched filter containing
6 circuitry to determine the timing of the transmission;
7 a subframe generator containing circuitry to create a data unit for transmission on the
8 additional channel; and
9 a data generation unit coupled to the transmission input, the sync and tracking unit, and
10 the subframe generator, the data generation unit containing circuitry to encode and modulate the
11 data unit and to insert the data unit into the transmission.
- 1 20. The method of claim 19, wherein the timing is a frame timing, and wherein the data unit
2 is a frame.
- 1 21. The method of claim 19, wherein the timing is a slot timing, and wherein the data unit is
2 a slot.
- 1 22. The circuit of claim 19, wherein the sync and tracking unit comprises:
2 a sequence register coupled to the matched filter, the sequence register containing a
3 sequence that is based on channelization code of a stronger of two branches in the transmission;
4 a pulse shaping filter coupled to the transmission input and the matched filter, the pulse
5 shaping filter to decode the transmission; and
6 a timing tracking unit coupled to the data generating unit, the time tracking unit

7 containing circuitry to adjust sample timing of the data generating unit to keep it in sync with the
8 transmission's timing.

1 23. The circuit of claim 22, wherein the sequence stored in the sequence register is the
2 conjugate of a point wise product of the scrambling code and a channelization code of the
3 stronger of the two branches.

1 24. The circuit of claim 22, wherein the sync and tracking unit can keep track of a shifting
2 transmit timing in the transmission.

1 25. The circuit of claim 19, wherein the matched filter descrambles the transmission with a
2 sequence based on a channelization code of a stronger of two branches in the transmission.

1 26. The circuit of claim 19, wherein the data generation unit adds the encoded and modulated
2 data unit with the transmission.

1 27. The circuit of claim 26, wherein the data generation unit scrambles, gain modifies, and
2 spreads the data unit with a channelization code and a scrambling code provided by a scrambling
3 code generator.

1 28. The circuit of claim 19, wherein when there is no data unit to transmit, no data units are
2 inserted into the transmission.

- 1 29. A wireless device comprising:
- 2 a modem coupled to a radio frequency (RF) circuit, the modem containing circuitry to
- 3 encode and modulate a data stream to provide to the RF circuit for data transmission purposes
- 4 and demodulate and decode a received signal from the RF circuit for data reception purposes,
- 5 wherein the modem implements a first version of a technical specification; and
- 6 a coprocessor coupled to the modem and the RF circuit, the coprocessor containing
- 7 circuitry to encode and modulate a data stream to provide to the RF circuit for data transmission
- 8 purposes and demodulate and decode a received signal from the RF circuit for data reception
- 9 purposes, wherein the coprocessor implements a second version of the technical specification.
- 1 30. The wireless device of claim 29, wherein the second version of technical specification is
- 2 a superset of the first version of the technical specification.
- 1 31. The wireless device of claim 30, wherein the coprocessor implements a portion of the
- 2 second version of the technical specification not included in the first version of the technical
- 3 specification.
- 1 32. The wireless device of claim 29, wherein the coprocessor comprises:
- 2 a sync and tracking unit coupled to a modem, the sync and tracking unit containing
- 3 circuitry to synchronize the circuit to a timing of a transmission provided by the modem;
- 4 a matched filter coupled to the sync and tracking unit, the matched filter containing
- 5 circuitry to determine the timing of the transmission;
- 6 a subframe generator containing circuitry to create a data unit for transmission on the
- 7 additional channel; and
- 8 a data generation unit coupled to the transmission input, the sync and tracking unit, and

9 the subframe generator, the data generation unit containing circuitry to encode and modulate the
10 data unit and to insert the data unit into the transmission.

1 33. The wireless device of claim 29, wherein the wireless device is used in a wireless
2 communications system.

1 34. The wireless device of claim 33, wherein the wireless communications system is a UMTS
2 Release 5 compliant system.

1 35. The wireless device of claim 33, wherein the wireless communications system is a
2 CDMA Release C compliant system.